



Tony M Mine
M/017/0049

Wayne Western <waynewestern@utah.gov>

Reclamation Cost Estimate, Tony M Mine, UTU-80032, M/017/0049

2 messages

Reay, John <jreay@blm.gov>

Mon, Dec 30, 2013 at 9:54 AM

To: rellis@energyfuels.com

Cc: Paul Baker <paulbaker@utah.gov>, Wayne Western <waynewestern@utah.gov>, Sue Fivecoat <sfivecoa@blm.gov>

Ryan:

BLM is in receipt of and is reviewing your November 2013 Reclamation Cost Estimate for Tony M Mine. However, in order to complete our review of your estimate we request you submit detailed calculation showing that portion of the Reclamation Surety that will be obligated to the Bureau of Land Management (BLM). We also request that in any future correspondence you include, in addition to the UDOGM file number, the corresponding BLM file number in the subject line of your letter.

Thank You!

John Reay, Geologist
Henry Mountains Field Station
435-542-3461

Ryan Ellis <REllis@energyfuels.com>

Tue, Jan 14, 2014 at 12:13 PM

To: "Reay, John" <jreay@blm.gov>

Cc: Paul Baker <paulbaker@utah.gov>, Wayne Western <waynewestern@utah.gov>, Sue Fivecoat <sfivecoa@blm.gov>, "Frank Filas, P.E" <FFilas@energyfuels.com>

John,

As requested, attached is a BLM area breakout of the reclamation cost estimate for the Tony M Mine.

Please let me know if this is what you were looking for to evaluate the cost estimate.

From: Reay, John [mailto:jreay@blm.gov]

Sent: Monday, December 30, 2013 9:54 AM

To: Ryan Ellis

Cc: Paul Baker; Wayne Western; Sue Fivecoat

Subject: Reclamation Cost Estimate, Tony M Mine, UTU-80032, M/017/0049

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[Quoted text hidden]



Energy Fuels Resources (USA) Inc.

Ryan Ellis

1/21/2014

State of Utah Mail - Reclamation Cost Estimate, Tony M Mine, UTU-80032, M/017/0049

Project Engineer

t: 303.974.2151

225 Union Blvd., Suite 600

Lakewood, CO, US, 80228

<http://www.energyfuels.com>

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Reclamation Cost Estimate Submitted BLM 01.14.14.pdf

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Energy Fuels Resources (USA) Inc.
225 Union Blvd. Suite 600
Lakewood, CO, US, 80228
303 974 2140
www.energyfuels.com

January 14, 2014

Mr. John Reay
Bureau of Land Management
Henry Mountain Field Office
380 South 100 West
Hanksville, UT 84734

Re: Reclamation Cost Estimate, Large Mine NOI, Tony M Mine
UTU-80032, M/017/0049, Garfield County, Utah

Dear John:

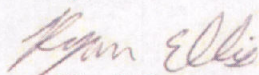
I received your December 30th 2013 email requesting the Bureau of Land Management (BLM) portion of the Tony M Mine Reclamation Cost Estimate be broken out. I have evaluated the portions of the Tony M disturbances that require reclamation and what lands they exist on. Section 16 Township 35S Range 11E is the only state land that is included in the Tony M Mine surface facilities area, all other lands are BLM. The two portals for the site are located within Section 16 (State Land) but the portal area extends south into Section 21 which is managed by the BLM. The evaporation pond is located within Section 17 which is managed by the BLM. The 8 vents are located on both State and BLM lands and the costs were separated based on the location of the vents.

A column has been added to the cost worksheets detailing the BLM portion of each task based on quantity of that task that will be conducted on BLM land. The indirect costs were allocated to the BLM portion of the direct costs using the same factors recommended by the Utah Division of Oil, Gas and Mining. As shown on the next page, the BLM portion of the total estimated reclamation cost of \$682,000 is \$583,000.

No changes have been made from the November 2013 Reclamation Cost Estimate with respect to total estimated cost, reclamation tasks, quantities or equipment selection.

Please contact me at 303-974-2151 or rellis@energyfuels.com should you have any questions or concerns.

Sincerely,


Ryan Ellis, P.E.
Project Engineer

Cc: P. Baker UDOGM
F. Filas, D. White, H. Roberts (Energy Fuels)

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Tony M Mine
Reclamation Cost Estimate Summary

Direct Costs

Portal Area	\$298,806		\$	241,020
Evaporation Pond Area	\$171,568		\$	171,568
Roads and Vents	\$28,165		\$	14,082
Subtotal Direct Costs	\$498,539			\$426,671

Indirect Costs

Mob/Demob	\$49,854	10.0%	\$	42,667
Contingency	\$24,927	5.0%	\$	21,334
Engineering Redesign	\$12,463	2.5%	\$	10,667
Main Office Expense	\$33,901	6.8%	\$	29,014
Project Management Fee	\$12,463	2.5%	\$	10,667
Subtotal	\$133,609	26.8%		\$114,348

Total Cost 2013	\$632,148			\$541,019
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Escalation (1.5% every year for 5 years)	\$48,855			\$41,812
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Reclamation Cost Escalated to 2018	\$681,003			\$582,831
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Bond Amount (rounded to nearest \$1,000)	\$682,000			\$583,000
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Tony M- Portal Area

Demolition of Structures	Means Costworks 2012 Reference Number	Unit Cost	Unit	Quantity	Cost	BLM Portion
Removal of Equipment and Materials	Estimate	\$ 1,000	EA	12	\$ 12,000	\$ 12,000
Demolition of Concrete Pads	02 41 13 17 5300	\$ 19.40	SY	4,068	\$ 78,911	\$ 70,230
Demolition of Buildings	13 05 05 50 0550	\$ 1.83	SF	32,961	\$ 60,319	\$ 53,080
Debris Hauling to Landfill	Estimate, Landfill Quote	\$ 600.00	EA	3	\$ 1,800	\$ 1,800
Remove Tanks	13 05 05 75 0530	\$ 1,550	EA	9	\$ 13,950	\$ 12,400
Disposal of Tanks	Estimate, Landfill Quote	\$ 200	EA	9	\$ 1,800	\$ 1,600
Remove Septic System	02 41 13 44 0300	\$ 1,136	EA	1	\$ 1,136	\$ 1,136
Septic System Excavation	31 23 16 42 0305	\$ 1.56	CY	55	\$ 86	\$ 86
Abandon Water Well	Local Contractor Estimate	\$ 5,000	EA	1	\$ 5,000	\$ 5,000
Subtotal					\$ 175,001	\$ 157,333

Regrading	Equipment Used	Hourly Rental Cost	Hourly Operating Cost	Hourly Operator Wage	Total Equip and Op Cost	Quantity	Units	Production Rate	Units	Reference Number	Cost	BLM Portion
Regrade the DRA	D-9	\$ 199	\$ 81	\$ 72	\$ 351	18,500	CY	990.0	CY/hr	CH- D9-65 ft Push	\$ 6,564	\$ 3,282
Regrade Site Berms	D-9	\$ 199	\$ 81	\$ 72	\$ 351	10,000	CY	778	CY/hr	CH- D9-100 ft Push	\$ 4,514	\$ 2,257
Backfill Mine Portals	2.5 CY LHD	\$ 76	\$ 53	\$ 72	\$ 200	1,125	CY	59	CY/hr	CH-LHD-400 ft Haul	\$ 3,802	\$ 1,901
Subtotal											\$ 14,880	\$ 7,440

Revegetation	Equipment Used	Hourly Rental Cost	Hourly Operating Cost	Hourly Operator Wage	Total Equip and Op Cost	Material Cost	Quantity	Units	Production Rate	Units	Reference Number	Cost	BLM Portion
Subgrade Ripping	D-9	\$ 199	\$ 81	\$ 72	\$ 351		40,333	CY	436	CY/hr	CH-D9-Ripping	\$ 32,512	\$ 22,758
Stage Topsoil In Placement Area	966 Loader	\$ 76	\$ 53	\$ 72	\$ 200		13,500	CY	64	CY/hr	CH-966-1000 ft Haul	\$ 42,550	\$ 29,785
Spread Topsoil	D-9	\$ 199	\$ 81	\$ 72	\$ 351		13,500	CY	778	CY/hr	CH- D9-100 ft Push	\$ 6,094	\$ 4,266
Seeding						\$ 25.50	1,089	MSF			32921 914 0500	\$ 27,770	\$ 19,439
Subtotal												\$ 108,926	\$ 76,248

Total \$ 298,806
BLM Total \$ 241,020

* Hourly rates include overhead and profit

N/A - information not available

LCY - loose cubic yard

HR - hour

Loader Rental Cost

Loader fuel cost per hour

Dozer (D-9) Rental Cost

D-9 Fuel Cost Per Hour

Maintenance Cost Per Hour

Operator Fully Burdened Hourly Rate (Includes Taxes and Profit)

\$ 76
\$ 18
\$ 199
\$ 46
\$ 35
\$ 72

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PORTAL AREA

Description: Support calculations for the reclamation cost estimate for the Portal Area

Task P1: Removal of Equipment and Materials

Assumptions

The office trailer and supplies will be sold, salvaged or reused. Cost for removing from the site are for transportation only.

Mobile equipment will be sold from the site at no cost.

Estimated cost per load = \$1,000

Item	Quantity	Truck Loads
Warehouse and Shop Supplies	N/A	6
Office Supplies	2	2
Storage Containers (CONEX)	N/A	4
Total		12

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Task P2: Demolition of Concrete Pads

Assumptions

Concrete pads will be broken into manageable pieces and placed within the Ore Slot Area prior to final grading.

The Ore Slots will be backfilled over with waste rock and not demolished.

RS Means reference 02 41 13 17 5300 was used to estimate the costs. \$19.40 per square yard.

Concrete areas estimated from a current aerial image.

Item	Quantity (sf)	Quantity (sy)	RS Means Reference	Unit Cost
Mine Office/Dry	11,628	1,292	02 41 13 17 5300	\$ 19.40
Shop/Warehouse	15,656	1,740	02 41 13 17 5300	\$ 19.40
Generator House	1,008	112	02 41 13 17 5300	\$ 19.40
Compressor House	3,072	341	02 41 13 17 5300	\$ 19.40
Fueling Station	3,244	360	02 41 13 17 5300	\$ 19.40
Auxiliary Building	2,000	222	02 41 13 17 5300	\$ 19.40

Task P3: Demolish Steel Buildings

Assumptions

Steel Buildings will be disassembled into manageable pieces and placed in the Ore Slot Area prior to final grading.

Lumber, furniture, carpet, and other non metallic debris will be hauled to a local landfill.

The landfill in Hanksville charges \$10 per ton. The estimated cost per 30 yd rolloff container is \$600 to account for hauling.

The demolition debris required to be hauled offsite is 90 yds.

RS means reference 13 05 05 50 0550 was used to estimate the costs. \$1.83 per square foot.

Building footprints estimated from a representative aerial image.

Item	Quantity (sf)	RS Means Reference	Unit Cost
Mine Office/Dry	11,628	13 05 05 50 0550	\$ 1.83
Shop/Warehouse	15,656	13 05 05 50 0550	\$ 1.83
Generator House	1,008	13 05 05 50 0550	\$ 1.83
Compressor House	2,816	13 05 05 50 0550	\$ 1.83
Auxiliary building	1,750	13 05 05 50 0550	\$ 1.83
Pump House	100	13 05 05 50 0550	\$ 1.83
Debris Hauling to Landfill	3	Estimate, Landfill Quote	\$ 600.00

Task P4: Remove Tanks

Assumptions

Steel tanks will be removed from the site. RS means reference 13 05 05 75 0530 was used to estimate the costs. \$1,550 per tank.

Disposal at Hanksville Landfill. Estimated \$200 each.

Item	Quantity	RS Means Reference	Unit Cost
Fuel Tank (EA)	8	13 05 05 75 0530	\$ 1,550
Water Tank (EA)	1	13 05 05 75 0530	\$ 1,550
Tank Disposal (EA)	9	Estimate, Landfill Quote	\$ 200

Task P5: Removal of Septic System

Assumptions

The septic tank is a 2,000-gallon precast concrete tank. Broken material will be placed in the Ore Slot Area.

Estimated excavation and backfill for the removal of the septic system is 55 cubic yards.

Item	Quantity	RS Means Reference	Unit Cost
Septic Tank Removal (EA)	1	02 41 13 44 0300	\$ 385
Distribution Box (EA)	1	02 41 13 44 1500	\$ 52
Leaching Chamber (EA)	1	02 41 13 44 1700	\$ 244
Leaching pit (EA)	1	02 41 13 44 2300	\$ 455
Excavation and Backfill (CY)	55	31 23 16 42 0305	\$ 1.56

PORTAL AREA

Task P6: Abandon Water Well

Assumptions

Well depth 700 feet. Obtained an estimate from a local well driller, Desert H2O Utah.

Item	Quantity (EA)
Abandon Well	\$ 5,000

Task P7: Site Regrade

Assumptions

Regrading will be accomplished with a D-9 sized dozer or similar.

Regrading volume is based on the length and height of the proposed waste dump benches.

There is no ore at the portal area that needs to be placed back in the mine.

The average push distance for the waste rock area is 65 feet.

The grading volume of 18,500 CY is based on the full build out of the waste rock area submitted in the NOI.

The waste rock bench will need grading from 1.5H:1V to 4H:1V slopes.

The average push distances for the site berms, access roads and finish grading is 100 feet.

Approximately 225 CY of waste rock will be required to seal each of the 5 portals/adits.

The average haul distance for the sealing of the portals with the LHD is 400 feet.

Rental costs obtained from Wheeler Machinery Co., Salt Lake City

Rental and operation costs for the 2.5 CY LHD are estimated to be the same as the 966 loader.

Item	Quantity (CY)	Reference	Productivity (CY/HR)	Unit Cost
Regrade Waste Rock Area	18,500	CH- D9-65 ft Push	990.0	\$ 0.35
Regrade Berms and Access Roads	10,000	CH- D9-100 ft Push	778.1	\$ 0.45
Seal Portals and Adits	1,125	CH-LHD-400 ft Haul	59.3	\$ 3.38

Task P8: Site Revegetation

Assumptions

Approximately 25 acres at the portal area has been redisturbed.

Subsoil ripping to 12-inches over 18 acres of roads and pads will be accomplished with a D-9 Dozer or similar.

Rental costs obtained from Wheeler Machinery Co., Salt Lake City

Assumed 13,500 CY of topsoil will be placed over 25 acres and corresponds to 4 inches.

Stockpiled topsoil will be placed with a 966 loader and spread with a D-9 Dozer.

Topsoil placement productivity is based on a 1000-foot haul and estimated cycle time.

Topsoil spreading productivity is based on a 100-foot push.

Item	Quantity	Reference	Productivity (CY/HR)	Unit Cost
Subsoil Ripping BCY	40,333	CH-D9-Ripping	436	\$ 0.81
Topsoil placement and spreading LCY	13,500	CH-966-1000 ft Haul	64	\$ 3.60
Seeding (Thousand SQ. FT)	1,089	32921 914 0500		\$ 25.50

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Demolition of Structures	Means Costworks 2012 Reference Number	Unit Cost	Unit	Quantity	Cost	BLM Portion
Remove Barge	CH-966-400 ft Haul X 2	\$ 4,000	EA	1	\$ 4,000	\$ 4,000
Remove Fencing	CH-D9-100 ft Push	\$ 3	LF	2,000	\$ 6,000	\$ 6,000
Remove Pipeline	Estimated	\$ 5	LF	187	\$ 935	\$ 935
Subtotal					\$ 10,935	\$ 10,935

Regrading	Equipment Used	Hourly Rental Cost	Hourly Operating Cost	Hourly Operator Wage	Total Equip and Op Cost	Quantity	Units	Production Rate	Units	Reference Number	Cost	BLM Portion
Remove and Place Riprap	966 Loader	\$ 76	\$ 53	\$ 72	\$ 200	800	CY	59.3	CY/hr	CH-966-400 ft Haul X 2	\$ 2,703	\$ 2,703
Breach Dam	D-9	\$ 199	\$ 81	\$ 72	\$ 351	12,300	CY	436	CY/hr	CH-D9-200 ft Push	\$ 9,915	\$ 9,915
Soil Sampling					\$ 500	24	Samples			Estimate	\$ 12,000	\$ 12,000
Windrow Contaminated Soil	D-9	\$ 199	\$ 81	\$ 72	\$ 351	8,500	CY	778	CY/hr	CH-D9-100 ft Push	\$ 3,837	\$ 3,837
Load Contaminated Soil	966 Loader	\$ 76	\$ 53	\$ 72	\$ 200	8,500	CY	119	CY/hr	Truck Fleet Productivity	\$ 14,361	\$ 14,361
Haul Contaminated Soil	14 CY Truck	\$ 34	\$ 56	\$ 72	\$ 162	8,500	CY	30	CY/hr	3 Trips Per Hour	\$ 46,400	\$ 46,400
Place Soil in Vent Shafts	320 Excavator	\$ 43	\$ 53	\$ 72	\$ 167	8,500	CY	119	CY/hr	Truck Fleet Productivity	\$ 11,994	\$ 11,994
Haul Excess Soil Underground	2.5 CY LHD	\$ 76	\$ 53	\$ 72	\$ 200	2,600	CY	59	CY/hr	LHD - 400 ft Haul	\$ 8,786	\$ 8,786
Subtotal											\$109,997	\$ 109,997

Revegetation	Equipment Used	Hourly Rental Cost	Hourly Operating Cost	Hourly Operator Wage	Total Equip and Op Cost	Material Cost	Quantity	Units	Production Rate	Units	Reference Number	Cost	BLM Portion
Subgrade Ripping	D-9	\$ 199	\$ 81	\$ 72	\$ 351		33,880	CY	436	CY/hr	CH-D9-Ripping	\$ 27,310	\$ 27,310
Seeding						\$ 25.50	915	MSF			32921 914 0500	\$ 23,326	\$ 23,326
Subtotal												\$ 50,636	\$ 50,636

Total \$ 171,568

BLM Total \$ 171,568

* Hourly rates include overhead and profit

N/A - information not available

LCY - loose cubic yard

HR - hour

14 CY Truck Rental Cost

\$ 34

14 CY Truck Fuel Cost Per Hour

\$ 21

Loader Rental Cost

\$ 76

Loader fuel cost per hour

\$ 18

Dozer (D-9) Rental Cost

\$ 199

D-9 Fuel Cost Per Hour

\$ 46

320 Excavator Rental Cost

\$ 43

320 Excavator Fuel Cost Per Hour

\$ 18

Maintenance Cost Per Hour

\$ 35

Operator Fully Burdened Hourly Rate (Includes Taxes and Profit)

\$ 72

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EVAPORATION POND AREA

Description: Support calculations for the reclamation cost estimate for the Evaporation Pond Area

Task E1: Breach Dam

Assumptions

Riprap from the toe of dam face will be utilized to armor the breach channel.
The dam breach will be accomplished with a D-9 dozer with an average push distance of 200 feet.
A productivity reduction of 50% is assumed for challenging site conditions during the dam breach.
The riprap will be removed from the dam face and placed in the breach channel with a 966 loader (2 steps).
Riprap will be placed to 5 feet above the invert over the 350 feet length of the breach channel.
Riprap removal and placement will require a 400-foot haul for each step.

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Item	Quantity (CY)	Reference	Productivity (CY/HR)	Unit Cost
Remove and Place Riprap	800	CH-966-400 ft Haul X 2	59	\$ 3.38
Breach Dam	12,300	CH-D9-200 ft Push	\$ 436	\$ 0.81

Task E2: Remove Contaminated Soil

Assumptions

Assumes removal of 3 inches of contaminated soil from 21 acres and placing in the mine vents and underground workings.
24 soil samples are assumed to be required to evaluate the evaporation pond sediments.
Soil sampling and analysis is expected to cost \$500 for each of the 24 samples.
A D-9 dozer will windrow the contaminated soil for the loader to pick up. A 100-foot push is assumed for the D-9.
A 966 loader will load 14 CY trucks with soil to be hauled to the vent holes.
Excess backfill material will be trammed and placed with a 2.5 CY LHD within the mine from the bottom of the vents.
The estimated haul distance for the LHD is 400 feet.
The rental and operating costs for the 2.5 CY LHD are estimated to be the same as the 966 Loader.
8,500 CY of contaminated soil is estimated to be removed.
The estimated haul distance from the pond to the vents is 10,000 feet each way.
There are 8 vents that require backfilling. The vents are 6 feet in diameter and 700 feet deep.
Loader productivity limited by the productivity of the four trucks.
The 320 excavator will be staged at the vents during backfilling to assist in getting the material into the vent.
The 320 excavator productivity is limited by the productivity of the four trucks.
The 320 excavator tram time between vents is factored into the productivity.
730 CY per vent results in 2,600 CY needing to be hauled and placed within the mine.

Item	Quantity CY	Reference	Productivity (CY/HR)	Unit Cost
Windrow Contaminated Soil	8,500	CH-D9-100 ft Push	\$ 778	\$ 0.45
Load Contaminated Soil	8,500	Truck Fleet Productivity	\$ 119	\$ 1.69
Haul Contaminated Soil	8,500	3 Trips Per Hour	\$ 30	\$ 5.46
Place Soil in Vent Shafts	8,500	Truck Fleet Productivity	\$ 119	\$ 1.41
Haul Excess Soil Underground	2,600	LHD - 400 ft Haul	\$ 59	\$ 3.38

Task E3: Remove Structures

Assumptions

The barge and walkway will be placed in the ore slot area within the portal area.
The fencing will be removed and placed within the ore slots at the portal area.
The piping will be cut into manageable pieces and placed in the ore slots at the portal area.

Item	Quantity	Units	Reference	Unit Cost
Barge	1	EA	Estimated	\$ 4,000
Fencing	2,000	LF	Estimated	\$ 3.00
Piping	187	LF	Estimated	\$ 5.00

Task E4: Site Revegetation

Assumptions

Subsoil ripping to 12-inches over 21 acres will be accomplished with a D-9 Dozer or similar.
Rental costs obtained from Wheeler Machinery Co., Salt Lake City.
No topsoil will be replaced in the evaporation pond area. The subsoil is suitable for growth medium.

Item	Quantity	Reference	Productivity (CY/HR)	Unit Price
Subsoil Ripping BCY	33,880	CH-D9-Ripping	436	\$ 0.81
Seeding (Thousand SQ. FT)	915	32921 914 0500		\$ 25.50

Vent Reclamation	Means Costworks 2012 Reference Number	Unit Cost	Unit	Quantity	Cost	BLM Portion
Excavate around each vent	Estimated	\$ 250		8	2,000	\$ 1,000
Remove vent casing and place within vent	Estimated	\$ 288	EA	8	2,304	\$ 1,152
Place Reinforced Concrete Cap	Estimated	\$ 200	CY	22	4,468	\$ 2,233
Spread topsoil over vent area	Estimated	\$ 200	EA	8	1,600	\$ 800
Seeding (Thousand SQ. FT)	32921 914 0500	\$ 25.50	Thousand sq. ft.	174.2	4,443	\$ 2,222
Subtotal					\$ 14,813	\$ 7,406

Road Reclamation	Equipment Used	Hourly Rental Cost	Hourly Operating Cost	Hourly Operator Wage	Total Equip and Op Cost	Material Cost	Quantity	Units	Production Rate	Units	Reference Number	Cost	BLM Portion
Grade, rip and topsoil roads	D-9	\$ 199	\$ 81	\$ 72	\$ 351		2,743	CY	136.0	CY/hr	CH-D9-Ripping	\$ 7,084	\$ 3,542
Packing and grading waterline	Excavator	\$ 199	\$ 68	\$ 72	\$ 339		1.3	AC	0.15	AC/hr	Estimated	\$ 2,936	\$ 1,468
Seeding (Thousand SQ. FT)						\$ 25.50	131	MSF			32921 914 0500	\$ 3,332	\$ 1,666
Subtotal												\$ 13,352	\$ 6,676

* Hourly rates include overhead and profit

N/A - information not available

LCY - loose cubic yard

HR - hour

14 CY Truck Rental Cost

14 CY Truck Fuel Cost Per Hour

Loader Rental Cost

Loader fuel cost per hour

Dozer (D-9) Rental Cost

D-9 Fuel Cost Per Hour

Maintenance Cost Per Hour

Operator Fully Burdened Hourly Rate (Includes Taxes and Profit)

Total \$ 28,165

BLM Total \$ 14,082

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F. J. ...

ROADS AND VENTS

Description: Support calculations for the reclamation cost estimate for the roads and vents

Task V1: Excavate and Remove Upper Portion of Vent Casing and Place Reinforced Concrete Cap

Assumptions

Excavate 6 feet deep around each vent.

Cut off vent casing 4 feet below surface and cut into pieces and place in the vent.

The same excavator that will be used to demolish the concrete pads and steel building will be used to excavate around the vents.

Excavator tram time is included in the Evaporation Pond Reclamation Costs.

Assumed the vent casing can be cut off and placed in the vent in 4 hours

The torch operator will cost \$72/hr. The same as the equipment operators.

Backfilling the vents is addressed in the evaporation pond reclamation.

The 18-inch thick reinforced concrete cap will be approximately 8-feet in diameter to extend 1-foot past the casing of the shaft.

Topsoil will be spread over the vent areas with a D-9 dozer while it is reclaiming the access roads.

The vent areas will be broadcast seeded. 0.5 acres per vent is assumed.

Item	Quantity	Reference	Unit Cost
Excavate around each vent	8	Estimated	\$ 250
Remove vent casing and place within vent	8	Estimated	\$ 288
Spread topsoil over vent area	8	Estimated	\$ 200
Place reinforced concrete cap 4 feet below surface (CY per Vent)	2.8	Estimated	\$ 200
Seeding (Thousand SQ. FT)	174.2	32921 914 0500	\$ 25.50

Task E2: Reclaim Roads

Assumptions

The area associated with roads requiring reclamation is approximately 1.7 acres.

The area associated with the waterline corridor is approximately 1.3 acres.

The roads will be regraded and topsoiled with a D-9 dozer.

Flat sections of road that do not require regrading will be ripped to 12-inches for compaction relief.

The cost for grading and topsoiling is assumed to be the same as ripping per acre.

The waterline corridor will be regraded and pocked with an excavator.

The estimated pocking and grading rate is 0.15 acre per hour.

The roads will broadcast seeded.

Item	Quantity	Unit	Reference	Productivity	Unit Cost
Grade, rip and topsoil roads	2,743	CY	CH-D9-Ripping	136	\$ 2.58
Pocking and grading waterline	1.3	Acres	Estimated	0.15	\$ 2,000
Seeding (Thousand SQ. FT)	131	TSF	32921 914 0500		\$ 25.50

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